WEST Search History

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DATE: Tuesday, April 05, 2005

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ	
☐	L35	L34 and (display$ near5 graphs)	5
☐	L34	L33 and (data near5 table$1)	27
☐	L33	L32 and updat$	31
☐	L32	L31 and (trend analysis)	35
☐	L31	l26 and (query$ near5 table$1)	50
☐	L30	l26 and (query$ near5 dattabase$)	0
☐	L29	L28 and (data near5 graphs)	5
☐	L28	L27 and (table$1 near5 populat$)	40
☐	L27	L26 and (database$1 near5 table$1)	305
☐	L26	(access near5 database$1) and (trend near5 analysis)	762
☐	L25	L23 and (data$ near5 updat$)	2
☐	L24	L23 and (data near5 captur$)	0
☐	L23	'trend analysis'.ti.	61
☐	L22	L21 and query$	6
☐	L21	(data adj5 captur$) same (trend near5 analysis)	11
☐	L20	L18 and access	7
☐	L19	L18 and (dataset$1 near5 updat$)	0
☐	L18	(data analysis) same (trend$1 near5 graphs)	16
☐	L17	L15 and (populat$ same captur$)	1
☐	L16	L15 and (populat$ same report$1)	0
☐	L15	(updat$ near5 database$) same (trend near5 analysis)	30
☐	L14	L13 and (query$ near5 trend$1)	2
☐	L13	L12 and (query$ near5 report$1)	16
☐	L12	l10 and (report$1 same analysis)	118
☐	L11	L10 and (generat$ near5 rank$)	2
☐	L10	L9 and (data adj5 captur$)	246
☐	L9	(trend adj5 analysis)	2458
☐	L8	l1 and (trend adj5 analysis)	0
☐	L7	l1 and (database$ near5 market)	0
☐	L6	l1 and (bar near5 graph)	0
☐	L5	l1 and (barnear5 graph)	0

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☐	L4	l1 and (pie near5 graph)	0
☐	L3	L1 and (data near5 query$)	1
☐	L2	L1 and (data near5 graphs)	0
☐	L1	(data and captur$ and analys$).ti.	90

END OF SEARCH HISTORY

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Search Results - Record(s) 1 through 5 of 5 returned.

☐ 1. Document ID: US 6668253 B1

Using default format because multiple data bases are involved.

L35: Entry 1 of 5 File: USPT Dec 23, 2003

US-PAT-NO: 6668253
DOCUMENT-IDENTIFIER: US 6668253 B1

TITLE: Enterprise information management system and methods

DATE-ISSUED: December 23, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thompson; Michael R.	Xenia	OH		
Burkhart; Tal D.	Kettering	OH		
Smith; Lisa D.	Kettering	OH		
Niehoff; Gregory P.	Miamisburg	OH		
Ward; Jamie A.	Kettering	OH		
Horan; Julie L.	Dayton	OH		
Jung; Mark A.	Centerville	OH		
Datla; Rayapa S.	Dayton	OH		
Syed; Safdar R.	Dayton	OH		
Sunkara; Satya S.	West Chester	OH		
Hergenrather; Carol M.	Dayton	OH		
Matthews; Mary J.	Dayton	OH		
Johnston; Teresa J.	Miamisburg	OH		
Campbell-Kaminski; Elizabeth E.	Dayton	OH		

US-CL-CURRENT: 707/10

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 2. Document ID: US 6615258 B1

L35: Entry 2 of 5 File: USPT Sep 2, 2003

US-PAT-NO: 6615258
DOCUMENT-IDENTIFIER: US 6615258 B1

TITLE: Integrated customer interface for web based data management

h e b b g e e e f e ef b e

DATE-ISSUED: September 2, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barry; B. Reilly	Colorado Springs	CO		
Chodoronek; Mark A.	Centreville	VA		
DeRose; Eric	Falls Church	VA		
Gonzales; Mark N.	Manassas	VA		
James; Angela R.	Chevy Chase	MD		
Levy; Lynne	Herndon	VA		
Tusa; Michael	Ridgefield	CT		

US-CL-CURRENT: 709/223; 709/229

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

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3. Document ID: US 6549820 B1

L35: Entry 3 of 5 File: USPT Apr 15, 2003

US-PAT-NO: 6549820
DOCUMENT-IDENTIFIER: US 6549820 B1
**** See image for Certificate of Correction ****

TITLE: Method and system for providing feedback from a non-destructive inspection of a composite part

DATE-ISSUED: April 15, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barrett; Russell A.	Douglass	KS		
Fischer; Jon J.	Bentley	KS		
Garrett; Kenneth E.	Wichita	KS		
Gayle; David M.	Douglass	KS		
Holdeman; Timothy L.	Halstead	KS		
Jundt; Darrell C.	Derby	KS		
Kitt; Brian R.	Wichita	KS		
Ruebke; Donald D.	Whitewater	KS		
Russell; Brett E.	Seattle	WA		
Stewart; Kenneth C.	Wichita	KS		
Welch; John M.	Wichita	KS		
Jansen; Sandra L.	Wichita	KS		

US-CL-CURRENT: 700/110; 382/141, 700/169

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

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h e b b g e e e f e ef b e

4. Document ID: US 5870746 A

L35: Entry 4 of 5 File: USPT Feb 9, 1999

US-PAT-NO: 5870746
DOCUMENT-IDENTIFIER: US 5870746 A

TITLE: System and method for segmenting a database based upon data attributes

DATE-ISSUED: February 9, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutson; James F.	Roswell	GA		
Anand; Tejwansh S.	Roswell	GA		
Taheri; Sheila	Decatur	GA		
Coulter; Scott D.	Marietta	GA		
Copas; Kevin W.	Lawrenceville	GA		

US-CL-CURRENT: 707/101; 707/10

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

5. Document ID: US 5832496 A

L35: Entry 5 of 5 File: USPT Nov 3, 1998

US-PAT-NO: 5832496
DOCUMENT-IDENTIFIER: US 5832496 A

TITLE: System and method for performing intelligent analysis of a computer database

DATE-ISSUED: November 3, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Anand; Tejwansh S.	Roswell	GA		
Wikle; Glenn K.	Sante Fe	NM		
Lindsay; Marshall P.	San Diego	CA		
Schubert; Richard N.	San Diego	CA		
Lettington; Drew T.	San Diego	CA		
Ludwig; Jeffrey P.	San Diego	CA		

US-CL-CURRENT: 707/102; 707/6, 715/835

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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Term	Documents
GRAPHS	113279
GRAPH	435469
DISPLAY$	0
DISPLAY	1748772
DISPLAYA	38
DISPLAYABASEABAOK	1
DISPLAYABEL	1
DISPLAYABIE	4
DISPLAYABILITIES	7
DISPLAYABILITY	73
DISPLAYABLE	10955
(L34 AND (DISPLAY$ NEAR5 GRAPHS)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	5

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Search Results - Record(s) 1 through 25 of 25 returned.

☐ 1. Document ID: US 6201884 B1

Using default format because multiple data bases are involved.

L2: Entry 1 of 25 File: USPT Mar 13, 2001

US-PAT-NO: 6201884
DOCUMENT-IDENTIFIER: US 6201884 B1

TITLE: Apparatus and method for trend analysis in graphical information involving spatial data

DATE-ISSUED: March 13, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Van Bemmel; Peter P.	Houston	TX		
Pepper; Randolph E. F.	Sugar Land	TX		

US-CL-CURRENT: 382/109

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. De

☐ 2. Document ID: JP 2004222871 A

L2: Entry 2 of 25 File: JPAB Aug 12, 2004

PUB-NO: JP02004222871A
DOCUMENT-IDENTIFIER: JP 2004222871 A
TITLE: GENERATOR OF DATA BASE FOR VISITORS' TREND ANALYSIS

PUBN-DATE: August 12, 2004

INVENTOR-INFORMATION:

NAME	COUNTRY
HASEGAWA, MASAHIKO	

INT-CL (IPC): A63 F 7/02

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Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

3. Document ID: DE 10064315 A1

L2: Entry 3 of 25 File: EPAB Jul 18, 2002

PUB-NO: DE010064315A1
DOCUMENT-IDENTIFIER: DE 10064315 A1
TITLE: Market research for service based industries in which standardized data collection and analysis are used to simplify and reduce the cost of data collection so that more frequent surveys can be undertaken to assess trends

PUBN-DATE: July 18, 2002

INVENTOR-INFORMATION:

NAME	COUNTRY
SINZGER, MARTIN	DE
PULVERMUELLER, PATRICK	DE

INT-CL (IPC): G06 F 17/40
EUR-CL (EPC): G06F017/60

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

4. Document ID: JP 2004222871 A

L2: Entry 4 of 25 File: DWPI Aug 12, 2004

DERWENT-ACC-NO: 2004-575979
DERWENT-WEEK: 200456
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Database generation apparatus for customer trend analysis in game arcade, provides prize based on information in game medium count receipt, and generates database based on difference between game medium count time and prize exchange time

PRIORITY-DATA: 2003JP-0012795 (January 21, 2003)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 2004222871 A	August 12, 2004		020	A63F007/02

INT-CL (IPC): A63 F 7/02

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

5. Document ID: GB 2405245 A, WO 2004007909 A2, AU 2003244859 A1

L2: Entry 5 of 25 File: DWPI Feb 23, 2005

h e b b g e e e f e b ef b e

DERWENT-ACC-NO: 2004-123015
DERWENT-WEEK: 200515
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Data analysis used in oil/gas well bore diagnosis, involves retrieving data such as temperature fluid flow rate from sensors deployed at specific locations in well bore and analyzing data to indicate trends in bore

INVENTOR: GAJRAJ, A; KIMMINAU, S ; KOSMALA, A G ; WALSH, P W ; KOSMALA, A G E

PRIORITY-DATA: 2002GB-0016647 (July 17, 2002)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
GB 2405245 A	February 23, 2005		000	E21B047/00
WO 2004007909 A2	January 22, 2004	E	036	E21B047/00
AU 2003244859 A1	February 2, 2004		000	E21B047/00

INT-CL (IPC): E21 B 47/00

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 6. Document ID: TW 561419 A

L2: Entry 6 of 25 File: DWPI Nov 11, 2003

DERWENT-ACC-NO: 2004-429316
DERWENT-WEEK: 200440
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Trend patent forecast system and the method thereof - providing customized industry analysis data

INVENTOR: SHIH, Y

PRIORITY-DATA: 2001TW-0127847 (November 9, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
TW 561419 A	November 11, 2003		000	G06N005/04

INT-CL (IPC): G06 N 5/04

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 7. Document ID: JP 2003077066 A

L2: Entry 7 of 25 File: DWPI Mar 14, 2003

DERWENT-ACC-NO: 2003-284451
DERWENT-WEEK: 200328
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Enterprise support system for e.g. store and restaurant, has data center which analyzes statistics of consumer's trend and purchase consumption and send

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analysis result to each enterprise

PRIORITY-DATA: 2001JP-0310714 (August 31, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 2003077066 A	March 14, 2003		005	G07G001/12

INT-CL (IPC): G06 F 17/60; G07 G 1/12; G07 G 1/14

8. Document ID: JP 2003044646 A

L2: Entry 8 of 25 File: DWPI Feb 14, 2003

DERWENT-ACC-NO: 2003-216803
DERWENT-WEEK: 200321
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Sales record management state warning system for enterprises, analyses time-series data statistically and produces warning when fluctuation in regular trend corresponds to abnormal stochastic

PRIORITY-DATA: 2001JP-0235755 (August 3, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 2003044646 A	February 14, 2003		009	G06F017/60

INT-CL (IPC): G06 F 17/60

9. Document ID: JP 2002358398 A

L2: Entry 9 of 25 File: DWPI Dec 13, 2002

DERWENT-ACC-NO: 2003-204328
DERWENT-WEEK: 200320
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Consumption trend analysis system in electronic commerce has data processing unit which generates order situation data for each group of customers as order data with reference to respective database

PRIORITY-DATA: 2001JP-0167566 (June 4, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 2002358398 A	December 13, 2002		012	G06F017/60

INT-CL (IPC): G06 F 17/30; G06 F 17/60

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Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 10. Document ID: US 6470210 B1, US 20020147408 A1

L2: Entry 10 of 25 File: DWPI Oct 22, 2002

DERWENT-ACC-NO: 2003-091680
DERWENT-WEEK: 200308
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Classified atrial arrhythmia analysis method using implantable medical device, involves measuring time duration associated with each of detected atrial and SVT rhythms, using which trend data is produced

INVENTOR: CHEN, V; EBERLE, L ; FOSTER, C ; PROPP, H ; RICCI, C ; SEIM, G

PRIORITY-DATA: 2001US-0827770 (April 6, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 6470210 B1	October 22, 2002		000	A61B005/046
US 20020147408 A1	October 10, 2002		019	A61B005/46

INT-CL (IPC): A61 B 5/046; A61 B 5/46

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 11. Document ID: US 20020128884 A1

L2: Entry 11 of 25 File: DWPI Sep 12, 2002

DERWENT-ACC-NO: 2003-028980
DERWENT-WEEK: 200302
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Computer implemented survey data analyzing method involves predicting future behavior of population based on trend analysis conducted on point estimates of population parameter

INVENTOR: HECHING, A R; INAGANTI, R ; LEUNG, Y T

PRIORITY-DATA: 2000US-0739637 (December 20, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 20020128884 A1	September 12, 2002		011	G06F017/60

INT-CL (IPC): G06 F 17/60

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

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☐ 12. Document ID: JP 2002215016 A

L2: Entry 12 of 25 File: DWPI Jul 31, 2002

DERWENT-ACC-NO: 2003-396866
DERWENT-WEEK: 200338
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: School entrance examination analysis method involves storing trend in question-setting of school being obtained by classifying and analyzing questions according to school and subject, in advice database for advising students

PRIORITY-DATA: 2001JP-0010430 (January 18, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 2002215016 A	July 31, 2002		012	G09B019/00

INT-CL (IPC): G06 F 17/60; G09 B 5/14; G09 B 19/00

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 13. Document ID: DE 10064315 A1

L2: Entry 13 of 25 File: DWPI Jul 18, 2002

DERWENT-ACC-NO: 2002-600811
DERWENT-WEEK: 200265
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Market research for service based industries in which standardized data collection and analysis are used to simplify and reduce the cost of data collection so that more frequent surveys can be undertaken to assess trends

INVENTOR: PULVERMUELLER, P; SINZGER, M

PRIORITY-DATA: 2000DE-1064315 (December 22, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 10064315 A1	July 18, 2002		008	G06F017/40

INT-CL (IPC): G06 F 17/40

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 14. Document ID: JP 2002189736 A

L2: Entry 14 of 25 File: DWPI Jul 5, 2002

DERWENT-ACC-NO: 2002-562992
DERWENT-WEEK: 200260
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Patent information recording medium for technical trend analysis of patent

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gazette, records information, document technical profile and description data of patent application in respective storage sections

PRIORITY-DATA: 2000JP-0404474 (December 21, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 2002189736 A	July 5, 2002		005	G06F017/30

INT-CL (IPC): G06 F 17/30

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

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15. Document ID: JP 2002108937 A

L2: Entry 15 of 25 File: DWPI Apr 12, 2002

DERWENT-ACC-NO: 2002-400415
DERWENT-WEEK: 200243
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Internet newest trend analysis and display system has word extraction unit that automatically collects documents from Web sites on Internet, and cuts word from collected data

PRIORITY-DATA: 2000JP-0294896 (September 27, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 2002108937 A	April 12, 2002		006	G06F017/30

INT-CL (IPC): G06 F 17/30

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

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16. Document ID: EP 971321 A2, US 6216066 B1, JP 2000137702 A

L2: Entry 16 of 25 File: DWPI Jan 12, 2000

DERWENT-ACC-NO: 2000-128173
DERWENT-WEEK: 200122
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Generating alerts from data obtained from a process through automated multivariate data assessment in trend performance analysis of aircraft engines

INVENTOR: DOEL, D L; GOEBEL, K F

PRIORITY-DATA: 1998US-0108359 (July 1, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 971321 A2	January 12, 2000	E	034	G07C003/00

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US 6216066 B1	April 10, 2001	000	G06F007/00
JP 2000137702 A	May 16, 2000	079	G06F017/12

INT-CL (IPC): B64 D 45/00; B64 F 5/00; G06 F 7/00; G06 F 17/12; G06 F 19/00; G07 C 3/00

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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☐ 17. Document ID: EP 895399 A1, JP 11065874 A

L2: Entry 17 of 25 File: DWPI Feb 3, 1999

DERWENT-ACC-NO: 1999-108777
DERWENT-WEEK: 199920
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Server e.g. for monitoring machine data such as reprographic machines from remote source - has server modules directly connected to given machines and second level of server modules with trend analysis and diagnostic capability connected to network and each module associated with set of machines on network

INVENTOR: HOLT, C P; SHAHIN, M M ; SIEGEL, R P ; THIERET, T E

PRIORITY-DATA: 1997EP-0305740 (July 30, 1997), 1997JP-0222562 (August 19, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 895399 A1	February 3, 1999	E	020	H04N001/00
JP 11065874 A	March 9, 1999		017	G06F011/22

INT-CL (IPC): B41 J 29/38; G03 G 15/00; G05 B 23/02; G06 F 3/12; G06 F 11/22; G06 F 13/00; H04 N 1/00; H04 N 1/21

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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☐ 18. Document ID: US 5815413 A, EP 1017313 A1, WO 9849935 A1, AU 9876849 A

L2: Entry 18 of 25 File: DWPI Sep 29, 1998

DERWENT-ACC-NO: 1998-542076
DERWENT-WEEK: 200036
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Nonlinear data analysis method for electroencephalogram brain wave - involves determining whether differences between similar but different states in nonlinear process are indicated based on comparison between indicative trend and known discriminating indicator

INVENTOR: HIVELY, L M; NG, E G

PRIORITY-DATA: 1997US-0853226 (May 8, 1997)

PATENT-FAMILY:

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PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5815413 A	September 29, 1998		017	A61B005/00
EP 1017313 A1	July 12, 2000	E	000	A61B005/04
WO 9849935 A1	November 12, 1998	E	000	A61B005/04
AU 9876849 A	November 27, 1998		000	A61B005/04

INT-CL (IPC): A61 B 5/00; A61 B 5/04

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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☐ 19. Document ID: WO 9801813 A2, JP 10505033 X

L2: Entry 19 of 25 File: DWPI Jan 15, 1998

DERWENT-ACC-NO: 1998-101245
DERWENT-WEEK: 199903
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Chart for time series data analysis e.g. for share issue pricing - smooths y-curve by time sequential monitored value and converts differential curve's short term motion trend value b-curve, middle term motion trend value bm-curve and long term motion trend value bL-curve to standardisation curves

INVENTOR: SUGANUMA, S

PRIORITY-DATA: 1996JP-0195227 (July 8, 1996)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 9801813 A2	January 15, 1998	J	030	G06F017/60
JP 10505033 X	November 4, 1998		000	G06F017/60

INT-CL (IPC): G06 F 17/60

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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☐ 20. Document ID: JP 3464304 B2, JP 08248085 A

L2: Entry 20 of 25 File: DWPI Nov 10, 2003

DERWENT-ACC-NO: 1996-488970
DERWENT-WEEK: 200377
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Computerised load interruption test analysis system for hydro-electric power generating station - has printer which prints out trend graph that is derived from monitored data, and test result table that is derived from personal computers analysis of monitored data

PRIORITY-DATA: 1995JP-0047665 (March 7, 1995)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC

h e b b g e e e f e b ef b e

JP 3464304 B2	November 10, 2003	011	G01R031/00
JP 08248085 A	September 27, 1996	010	G01R031/00

INT-CL (IPC): G01 R 31/00; G01 R 31/34

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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☐ 21. Document ID: JP 07173789 A

L2: Entry 21 of 25 File: DWPI Jul 11, 1995

DERWENT-ACC-NO: 1995-273327
DERWENT-WEEK: 199536
COPYRIGHT 2005 DERWENT INFORMATION LTD
TITLE: Frequency spectrum analysis data collection appts. for paper-making machine control system - has spectrum trend data collection unit to determine roller dia. of paper-making machine

PRIORITY-DATA: 1993JP-0319586 (December 20, 1993)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 07173789 A	July 11, 1995		004	D21F007/06

INT-CL (IPC): D21 F 7/06

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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☐ 22. Document ID: US 5226118 A

L2: Entry 22 of 25 File: DWPI Jul 6, 1993

DERWENT-ACC-NO: 1993-226903
DERWENT-WEEK: 199328
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TITLE: Data analysis system and method for industrial process control systems - produces trend charts and other visual data displays, facilitating analysis of large sets of measurement data

INVENTOR: BAKER, M K; FREEDLAND, A ; LANE, L A ; PERLOFF, D S

PRIORITY-DATA: 1991US-0647742 (January 29, 1991)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5226118 A	July 6, 1993		036	G06F015/62

INT-CL (IPC): G06F 15/62

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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23. Document ID: US 4852570 A

L2: Entry 23 of 25 File: DWPI Aug 1, 1989

DERWENT-ACC-NO: 1989-277463
DERWENT-WEEK: 198938
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TITLE: Comparative medical-physical analysis - reviewing extensive compilation of test and medical data to reveal trends in recess of development

INVENTOR: LEVINE, A B

PRIORITY-DATA: 1989US-0308071 (February 9, 1989)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 4852570 A	August 1, 1989		011	

INT-CL (IPC): A61B 5/00; G01D 9/00

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

24. Document ID: US 4689615 A

L2: Entry 24 of 25 File: DWPI Aug 25, 1987

DERWENT-ACC-NO: 1988-070383
DERWENT-WEEK: 198810
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TITLE: Data source trend display system using digital techniques - uses bar-graph techniques and display appts. controlled by computer system which analyses output of data source according to users

INVENTOR: ROSS, V D

PRIORITY-DATA: 1983US-0548567 (November 3, 1983)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 4689615 A	August 25, 1987		091	

INT-CL (IPC): G09G 1/00

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

25. Document ID: DE 2811397 A, DE 2811397 B, US 4323766 A

L2: Entry 25 of 25 File: DWPI Sep 20, 1979

DERWENT-ACC-NO: 1979-J2276B
DERWENT-WEEK: 197939

h e b b g e e e f e b ef b e

TITLE: Analysis combination for large data quantities - uses trend curves and event references for checking economic processes

INVENTOR: BRACHTHAEU, N

PRIORITY-DATA: 1978DE-2811397 (March 16, 1978)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 2811397 A	September 20, 1979		000	
DE 2811397 B	June 4, 1980		000	
US 4323766 A	April 6, 1982		000	

INT-CL (IPC): G06C 3/00; G06G 1/06; G06K 11/00

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L20: Entry 1 of 7 File: PGPB Dec 16, 2004

PGPUB-DOCUMENT-NUMBER: 20040254822
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040254822 A1

TITLE: System and method for centralized institution admission application submission, processing, analysis, and distribution

PUBLICATION-DATE: December 16, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Mandelbaum, Steven Jay	Washington	DC	US	

US-CL-CURRENT: 705/7

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

2. Document ID: US 20030131097 A1

L20: Entry 2 of 7 File: PGPB Jul 10, 2003

PGPUB-DOCUMENT-NUMBER: 20030131097
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030131097 A1

TITLE: Interactive path analysis

PUBLICATION-DATE: July 10, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kasriel, Stephane	San Francisco	CA	US	
Swanson, Sara	Los Gatos	CA	US	

US-CL-CURRENT: 709/224

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 3. Document ID: US 20020178096 A1

L20: Entry 3 of 7 File: PGPB Nov 28, 2002

PGPUB-DOCUMENT-NUMBER: 20020178096
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020178096 A1

TITLE: Virtual reality generator for use with financial information

PUBLICATION-DATE: November 28, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Marshall, Paul Steven	New York	NY	US	

US-CL-CURRENT: 705/35

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 4. Document ID: US 5774878 A

L20: Entry 4 of 7 File: USPT Jun 30, 1998

US-PAT-NO: 5774878
DOCUMENT-IDENTIFIER: US 5774878 A

TITLE: Virtual reality generator for use with financial information

DATE-ISSUED: June 30, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Marshall; Paul Steven	New York	NY	10003	

US-CL-CURRENT: 705/35; 705/1, 705/10, 705/36

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 5. Document ID: US 5705929 A

L20: Entry 5 of 7 File: USPT Jan 6, 1998

US-PAT-NO: 5705929
DOCUMENT-IDENTIFIER: US 5705929 A

TITLE: Battery capacity monitoring system

DATE-ISSUED: January 6, 1998

h e b b g e e e f e ef b e

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Caravello; Ronald G.	Boca Raton	FL		
Tinker; David M.	Delray Beach	FL		
Rognas; Roger D.	Pompano Beach	FL		

US-CL-CURRENT: 324/430; 324/434

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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☐ 6. Document ID: US 5675746 A

L20: Entry 6 of 7 File: USPT Oct 7, 1997

US-PAT-NO: 5675746
DOCUMENT-IDENTIFIER: US 5675746 A
**** See image for Certificate of Correction ****

TITLE: Virtual reality generator for use with financial information

DATE-ISSUED: October 7, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Marshall; Paul S.	Hoboken	NJ	07030	

US-CL-CURRENT: 705/35; 705/1

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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☐ 7. Document ID: JP 02125305 A

L20: Entry 7 of 7 File: JPAB May 14, 1990

PUB-NO: JP402125305A
DOCUMENT-IDENTIFIER: JP 02125305 A
TITLE: PLANT CONTROL PERFORMANCE EVALUATING DEVICE

PUBN-DATE: May 14, 1990

INVENTOR-INFORMATION:

NAME	COUNTRY
TAKAHASHI, SETSUYA	
SUEYOSHI, TAKANORI	
SATOU, HIROTAKE	
IMAI, TAKAO	

US-CL-CURRENT: 702/108; 702/FOR.170
INT-CL (IPC): G05B 23/02; G01D 21/00

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☐ 1. Document ID: US 20040073539 A1

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L25: Entry 1 of 2 File: PGPB Apr 15, 2004

PGPUB-DOCUMENT-NUMBER: 20040073539
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040073539 A1

TITLE: Query abstraction high level parameters for reuse and trend analysis

PUBLICATION-DATE: April 15, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Dettinger, Richard D.	Rochester	MN	US	
Stevens, Richard J.	Mantorville	MN	US	

US-CL-CURRENT: 707/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 2. Document ID: US 5088488 A

L25: Entry 2 of 2 File: USPT Feb 18, 1992

US-PAT-NO: 5088488
DOCUMENT-IDENTIFIER: US 5088488 A

TITLE: Method and apparatus for implementing histogram storage and trend analysis in a medical stimulator

DATE-ISSUED: February 18, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Markowitz; Harold T.	Roseville	MN		
Ledin; Ann L.	Minneapolis	MN		

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Fast Algorithms for Projected Clustering - Aggarwal, Procopiuc, Wolf, Yu, al. (1999) (Correct) (34 citations)
cs.sungshin.ac.kr/~jpark/HOME/References/charu_sigmod99.ps

A Conceptual Modelling Formalism for Temporal.. - Theodoulidis.. (1991) (Correct) (33 citations)
queries about past status, let alone **trend analysis** which is essential for applications such as
www.co.umist.ac.uk/~timelab/publications/papers/is91b.ps

Discovering Trends in Text Databases - Lent, Agrawal, Srikant (1997) (Correct) (28 citations)
to discovering interesting patterns and **trend analysis** on text documents was presented in (Feldman &
www.almaden.ibm.com/cs/people/ragrawal/papers/kdd97_trends.ps

Processing Complex Aggregate Queries over Data Streams - Dobra, Garofalakis.. (2002) (Correct) (26 citations)
processing applications such as, e.g.**trend analysis** and fraud/anomaly detection in
www.cs.cornell.edu/johannes/papers/2002/sigmod2002-streams.pdf

A Survey on Logical Models for OLAP Databases - Vassiliadis, Sellis (1999) (Correct) (22 citations)
through hierarchies and/or across members, **trend analysis** over sequential time periods, slicing subsets
www.dbnet.ece.ntua.gr/~dwq/p31.pdf

Multiple View Consistency for Data Warehousing - Zhuge, Wiener, Garcia-Molina (1997) (Correct) (19 citations)

warehouses are used only for statistical or **trend analysis**, and inconsistencies may not have an impact
www-db.stanford.edu/pub/papers/mvc-full.ps

High Performance OLAP and Data Mining on Parallel Computers - Goil, Choudhary (1998) (Correct) (17 citations)
Associations, Classification, Clustering and **Trend analysis** [2] can be used together with OLAP to
information for each aggregated point. ffl **Trend analysis** over sequential time periods Product Date
www.ece.nwu.edu/cpdc/TechReport/1997/CPDC-TR-97-05.ps.gz

Multi-Dimensional Regression Analysis of Time-Series Data.. - Chen, Dong, Han, Wah, Wang (2002) (Correct) (16 citations)
dynamic one relies heavily on regression and **trend analysis** instead of simple, static aggregates. The
but is not designed for regression and **trend analysis**. Can we extend the data cube technology and
www.cs.ust.hk/vldb2002/VLDB2002-papers/S10P01.pdf

OLAP Mining: An Integration of OLAP with Data Mining - Han (1997) (Correct) (15 citations)
statistical analysis packages, such as **trend analysis**, ratios and ranking, charting, browsing and
periodicity analysis, sequential pattern **analysis, and trend** and deviation analysis. For example, one
pegasus.ece.utexas.edu/course/ee380l/1998fall/papers/olap1.ps.gz

Finding Generalized Projected Clusters in High Dimensional Spaces - Aggarwal, Yu (2000) (Correct) (13 citations)
as customer segmentation, pattern recognition, **trend analysis** and classification. An overview of
web.mit.edu/charu/www/gen.ps

User Interface Evaluation of a Direct Manipulation Temporal.. - Hibino (Correct) (10 citations)
a new visual paradigm for the temporal **trend analysis** of video data [7, 9]In MMVIS, we provide a
seeking (VIS, 1]for the purpose of temporal **trend analysis** of video data. Previous studies evaluating
www.bell-labs.com/user/hibino/papers/mm97.ps.gz

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A Visual Query Language for Identifying Temporal Trends in .. - Hibino, Rundensteiner (Correct) (6 citations)
and to review visual results for **trend analysis**. In this paper, we present our approach for
ftp.eecs.umich.edu/people/rundenst/papers/r-95-10.ps

A Trend Analysis of Exploitations - Hilary Browne William (2001) (Correct) (5 citations)
A **Trend Analysis** of Exploitations Hilary K. Browne William A.
sponsored by the Department of Defense. A **Trend Analysis** of Exploitations Abstract We have conducted
www.cs.umd.edu/Library/TRs/CS-TR-4200/CS-TR-4200.ps.Z

Effective Temporal Aggregation using Point-based Trees - Jong Soo Kim (1999) (Correct) (5 citations)
of underlying data are important, such as **trend analysis** and forecasting in decision support systems,
dbserver.kaist.ac.kr/WWWDBMAN/jskim/./paper/dexa99.pdf

Trends in Embedded Systems Technology: An Industrial.. - Paulin, Liem.. (1995) (Correct) (5 citations)
in the areas of microcontrol and DSP. The **trend analysis** is from four sources: 1. A survey of over
cwc.ucsd.edu/courses/billlin/S97/ece260C/reading/nato95.ps.gz

The STRIP Rule System For Efficiently Maintaining Derived .. - Adelberg, Garcia-Molina, .. (1997) (Correct) (5 citations)
models for financial instruments often involve **trend analysis** and complicated statistics. ffl The base
www-db.stanford.edu/pub/papers/strip-rules.ps

A Framework for Finding Projected Clusters in High.. - Aggarwal.. (1999) (Correct) (5 citations)
as customer segmentation, classification and **trend analysis**. Unfortunately, all known algorithms tend to
customer segmentation, pattern recognition, **trend analysis** and classification. Various methods have been
www.cs.duke.edu/~magda/proclus.ps.gz

Threshold-Based Mechanisms to Discriminate Transient.. - Andrea Bondavalli Member (2000) (Correct) (4 citations)
sophisticated off-line error log audit and **trend analysis** (see Section 6) have been used, or studied in
they are normally applied off-line. In [15] **trend analysis** upon system error logs is applied, trying to
bonda.cnuce.cnr.it/Documentation/Papers/file-BCDGG98-B4170698-48.pdf

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Sub-element Indexing and Probabilistic Retrieval in the POSTGRES .. - Fontaine (1995) (Correct) (1 citation)
the values of which are given in an **analysis** of probabilistic models by Croft and Harper[4]
and Probabilistic Retrieval in the POSTGRES **Data**base System Anne Fontaine May 23, 1995 1
and how the terms are distributed within the **data**base collection to produce a rank value. The
wuarchive.wustl.edu/packages/postgres/papers/CSD-95-876.ps.Z

Practical Development of Internet Prolog Applications using.. - Samhaa El-Beltagy (Correct)
communication model which is used for intelligent **data** collection. The server side, represents the
/application-code, and the knowledge-base/**data** components and is entirely written in Prolog. The
will have to maintain extra knowledge such that **data** inputs could be mapped to application clients.
clement.info.umoncton.ca/~lpnet/proceedings97/beltagy.ps

Probabilistic Logical Information Retrieval for Content.. - Rölleke, Blömer (Correct)
of multimedia objects, since the content **analysis** of text documents is better developed than the
Information Retrieval for Content, Hypertext, and **Data**base Querying Thomas R olleke Markus Bl omer
searching for documents using a set of words as **data** model. However, in hypertext and **data**base
ls6-www.cs.uni-dortmund.de/~roelleke/papers/97/HIM/paper.ps.gz

Customized Dynamic Load Balancing for a Network of Workstations - Mohammed Javeed (1995) (Correct) (7 citations)
there is sufficient work to outweigh this **trend**, and globals are still better for 16 processors.
that needs to be moved, we invoke a profitability **analysis** routine, and move the work only if there is 10%
machines uses explicit message passing to share **data**, while each process has its own private address
ftp.cs.rochester.edu/pub/papers/systems/96.HPDC.Customized_dynamic_load_balancing.ps.gz

Orthogonalizing adaptive algorithms: RLS, DFT/LMS, and DCT/LMS - Beaufays (1995) (Correct)
and the previous theory can not be applied. The **analysis** is further complicated by the fact that only
lattice filters that extract information from past **data** samples to decorrelate present input signals, and
time step, RLS estimates R and P based on all past **data**, and updates the weight vector using the so-called
ftp.speech.sri.com/pub/people/francois/appendixe.ps.gz

An Analytic Model for ATM Network Performance and its.. - Karimi, Skillicorn (1997) (Correct) (1 citation)
= UnitTime vc .For the environment that we are **analysing**, with the latencies that are shown in Tables 2
architecture. BSP uses only two parameters to **capture** the properties of each architecture. These two
analytic model, we model the pipelining method for **data** transmission from the processor to the network.
www.cs.queensu.ca/TechReports/Reports/1997-414.ps

The Sequoia 2000 Electronic Repository - Larson, Plaunt, Hearst, Woodruff (1995) (Correct)
Survey's Geographic Information Retrieval and **Analysis** System (GIRAS)1]Each identified name, phrase,
the Sequoia 2000 project was to build a very large **data**base of Earth Science information. However, without
information and to browse its contents, this vast **data**base would rapidly become unmanagable and
bliss.berkeley.edu/papers/decpaper/decpaper.ps

A Knowledge Base for a Neural Guidance System - Krosley, Misra (Correct)
von Neumann architecture. Section 2 describes some **data** structures that will make it possible to implement
3 describes a physical implementation of the **data** structures in a neural memory mechanism. To
to constrain the design of the knowledge base. 2 **Data** Structures In this section, the paper describes a
kafanchan.mines.colorado.edu/pub/papers.dir/mcs9318.ps.Z

PROP: A Recursive Paradigm for Area-Efficient and Performance .. - Kuznar, Brglez (1995) (Correct)

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(6 citations)
problem formulation, the paper illustrates a **trend** of monotonically decreasing number of partitions of the partitioning process. In addition, **analysis** of delay performance of partitions reported in synchronized with a single clock, with a single **data** input designated as a pseudo-primary output (PPO)
www.cbl.ncsu.edu/www/publications/1995-ICCAD-Kuznar-p644/1995-ICCAD-Kuznar-p644.ps.gz

MUMPS MUltifrontal Massively Parallel Solver Version 2.0 - Amestoy, Duff, L'Excellent (1998) (Correct) (6 citations)
on the symmetric pattern of AA T and this **analysis** phase produces both an ordering and an assembly . 19 4.3 **Data** structures for factors and contribution blocks .
(called a frontal matrix) is assembled using **data** from the original matrix and from the sons of the
www.cerfacs.fr/algor/reports/TR_PA_98_02.ps.gz

Unsupervised Learning of Spatial Regularities - Ketterlin, Blamont, Korczak (1995) (Correct)
paper examines the task of remote-sensing image **analysis** as an unsupervised learning task. Images are information. This paper shows how this kind of **data** can be expressed. Clustering is then extended to then extended to deal with such complex, structured **data**. Experiments are provided to assess the validity
dpt-info.u-strasbg.fr/pub/recherche/IA/srs-95.ps.gz

Efficient Approximation Algorithm for Minimizing Makespan on.. - Chandra Chekuri (1998) (Correct) (2 citations)
3, and give the approximation algorithm and the **analysis** in Section 4. 2 Preliminaries We summarize only I machines can be used at any time. We try to **capture** these types of situations in our lower bound in
ftp.hpc.uh.edu/pub/ipco98/chekuri.ps

A Way to Separate Knowledge From Program in Structured.. - Coüasnon, Camillerapp (1995) (Correct) (3 citations)
Knowledge From Program in Structured Document **Analysis**: Application to Optical Music Recognition
www.irisa.fr/EXTERNE/projet/imadoc/articles/1995/icdar95.ps.gz

Competition-Based Learning - Grefenstette, De Jong, Spears (1992) (Correct) (1 citation)
of biological evolution. Recent results on the **analysis** of the implicit parallelism of alternative
www.aic.nrl.navy.mil/~spears/papers/onr92.ps.gz

CSTR Performance Limitations Due to Cooling Jacket Dynamics - .. - Russo, Bequette (1992) (Correct)
models. A key point is that this multiplicity **analysis** provides practical guidance for process redesign
www.eng.rpi.edu/dept/chem-eng/WWW/faculty/bequette/lou/conf_papers/aiche92.ps

Type Analysis for CHIP - Drabent, Pietrzak (1998) (Correct) (1 citation)
Type **Analysis** for CHIP W/lodzimierz Drabent 1 and Pawe/l
www.ipipan.waw.pl/~drabent/amast.ps.gz

A Time-Dependent Queueing-Network Model To Describe The.. - McCalla, Whitt (1998) (Correct)
in a short time scale, and focus on the main **trend**. Figure 3 illustrates the growth phase in which Network Analyzer (QNA) and similar performance **analysis** tools see Whitt (1983)Segal and Whitt (1989) service life cycles are measured in decades. To **capture** changing technology and customer preferences
www.research.att.com/~trmaster/./TRs/98/98.22/98.22.1.body.ps

On Nonconvex Subdifferential Calculus in Banach Spaces - Mordukhovich, Shao (1995) (Correct) (2 citations)
Journal of Convex **Analysis** Volume 2 (1995)No.1/2, 211-227 On Nonconvex
www.emis.ams.org/journals/JCA/vol.2_no.1+2/j14_63.ps.gz

Dynamic Staffing In A Telephone Call Center Aiming To Immediately.. - Whitt (1998) (Correct) (1 citation)
Abstract This paper proposes modeling and **analysis** methods to facilitate dynamic staffing in a current calls in progress, as well as historical **data**. The remaining holding times of calls in progress be possible to do better by exploiting historical **data**. Depending on the application, we should be able
www.research.att.com/library/trs/./TRs/98/98.34/98.34.1.body.ps

A Data-Driven Approach to Distributed Systems Modeling with.. - Hoffmann (Correct)
interaction. Most approaches to quantitative **analysis** of high performance DCS have been dominated by unfortunate fact that we do not know yet how to **capture** these dynamics. Few quantitative approaches have

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A Data-Driven Approach to Distributed Systems Modeling
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Multivariate Analysis. - The University Of (1972) (Correct) (2 citations)
a set of techniques dedicated to the **analysis** of **data** sets with more than one variable. Several of these sets of DV's. One **data** set Typically, the **data tables** to be analyzed are made of several measurements Multivariate **Analysis**. Herve Abdi 1 The University of Texas at
www.utdallas.edu/~herve/Abdi-MultivariateAnalysis-pretty.pdf

New Graphic User Interface For The Charged Particle Beam.. - George Gillespie And (Correct)
a window. All input parameters are set using unique **Data Tables** built into multiple-pane windows. All input parameters are set using unique **Data Tables** built into multiple-pane windows. Rule-of-thumb to support particle beam simulation and **analysis** programs. The S.P.A.R.C. GUIprovides a unique
www.aps.anl.gov/conferences/mirrored/www.cern.ch/accelconf/p95/ARTICLES/MPB/MPB14.PDF

Technical report on Rough Set Theory for Knowlege Discovery .. - Matteo Magnani July (Correct)
on Rough Set Theory for Knowlege Discovery in **Data** Bases Matteo Magnani July 1, 2003 1 Introduction developed by Zdzislaw Pawlak to analyze **data tables**. Its peculiarity is a well understood formal
magnanim.web.cs.unibo.it/data/pdf/roughkdd.pdf

Rate-Optimal Schedule for Multi-Rate DSP Computations - Govindarajan, Gao (1993) (Correct)
subject only to precedence constraints caused by **data** dependences. Our framework combines the insights four arcs. The values are shown in the following **table**. Arc Parameter k =0 k =1 k =2 (a,b) j lag = can be formulated as a mathematical problem by **capturing data** dependencies between two actors as a
ftp.capsl.udel.edu/pub/doc/acaps/memos/memo61.ps.gz

A Calculational Fusion System HYLO - Onoue, Hu, Iwasaki, Takeichi (1997) (Correct) (38 citations)
to an efficient program without intermediate **data** structures produced. In this paper, we report our chess board. Discussion and Concluding Remarks 27 **Table** 1 Experimental results using Gofer (y applies to almost all recursive functions of interest can be **captured** by hylomorphisms (Bird &de Moor 1994)and we
www.ipl.t.u-tokyo.ac.jp/~hu/pub/ifip97.ps.gz

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all have similar calling sequences and no external **data** files have to be read in anymore. A default set To The User :36 List Of **Tables** 37 List Of Figures 37 Program Summary Title Of of lines in distributed program, including test **data**, etc: 192 000 Memory storage required including
wwwinfo.cern.ch/asdoc/./psdir/pdflib.ps.gz

MHDL Language Reference Manual - Ir-Va- Version (Correct)
Operators :115 9.7 **Data Tables**
: 9 2.4 **Tables**
radar-ftp.nrl.navy.mil/pub/MHDL/docs/major/mhdlrm-v2.3.ps.gz

The UNIX Time-Sharing System - Ritchie, Thompson (1974) (Correct) (168 citations)
material, the collection and processing of trouble **data** from various switching machines within the Bell bytes about equally divided between code and **data tables**. This system, however, includes a very large 90K bytes about equally divided between code and **data tables**. This system, however, includes a very
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Adaptative Decision-Making by Systems of Cooperating.. - Polkowski, Skowron (Correct)
(e.g. experiments) expressed in the form of **data tables**. ffl the upward flow of synthesized decision rules generated from local decision **tables** (see Section 3)The global decision function is specification in some acceptable degree. Our **analysis** is applicable to many areas dealing with complex
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Problem Formulation for Multidisciplinary Optimization - Cramer, Dennis, Jr.. (1993) (Correct) (18 citations)
mapping as a new "discipline"Note that the **data** passed between the disciplines in Figure 1 may be feasible point. 7. Concluding Remarks. In **Table** 1 we compare the features of our three main optimization, or MDO, the coupling of two or more **analysis** disciplines with numerical optimization. The
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Of Some Basic Principles In Variational **Analysis** Jonathan M. Borwein 1 Boris S. Mordukhovich
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The History Heuristic and Alpha-Beta Search Enhancements in.. - Schaeffer (1989) (Correct) (20 citations)
be found in [9]Figures 5 and 6 present the same **data** using the NC measure and provide a better that the history heuristic and transposition **tables** significantly out-perform other alpha-beta 19 -References 1. J. Gillogly, Performance **Analysis** of the Technology Chess Program, Ph.D. thesis,
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Software, 20 (1994)pp. 494-495. 6] A.E. Brouwer, **Data** base of bounds for the minimum distance for Updated **Tables** Of Parameters Of (t Ms)Nets Andrew T.
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by the critical (dependence) cycle(s) 19] in the **Data** Dependency Graph (DDG) of the loop. Specifically (or software pipelined) schedules. Reservation **tables**, forbidden latencies, collision vectors, and listing all such sequences of initiations. **Analysis** of this state diagram reveals what initiation
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discussion will assume that we are convolving 8-bit **data** with a 6-point kernel for the purpose of image \delta 1 Fast Convolution With Packed Lookup **Tables** George Wolberg Dept. Of Computer Science City lookup **tables** tab i ,for 1 i 3. The product of **data** sample s with weight k i now reduces to a simple
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are often discouraged by the complex syntax of **query** languages and the output of long tables of formulation tasks. In addition, GIS do not include **query** mechanisms. Showing **trends** Epidemiology often interaction graphics, cartographic animation, time **trends**. ABSTRACT: Users with no specialized computer
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theory dealing with the expressive power of **query** languages. Nowadays, the expressiveness of and quantifiers seems to be the absolute minimum a **query** language has to offer. Yet, on finite structures,
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space, using high-level concepts, and a powerful **query** engine, MLClass can find high-level rules that program in development. Section 8 describes the **query** engine supporting MLClass. The classification
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from databases has been successfully used in **query** size estimation. Such information can be used for selectivities or intermediate result sizes for **query** optimization [11]In the context of association shelving criterion in supermarkets, stock **trends**, etc. Data mining is an emerging research area,
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Self-learning IP Traffic Classification based on Statistical Flow Characteristics

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Abstract. A number of key areas in IP network engineering, management and surveillance greatly benefit from the ability to dynamically identify traffic flows according to the applications responsible for their creation. Currently such classifications rely on selected packet header fields (e.g. destination port) or application layer protocol decoding. These methods have a number of shortfalls e.g. many applications can use unpredictable port numbers and protocol decoding requires high resource usage or is simply infeasible in case protocols are unknown or encrypted. We propose a framework for application classification using an unsupervised machine learning (ML) technique. Flows are automatically classified based on their statistical characteristics. We also propose a systematic approach to identify an optimal set of flow attributes to use and evaluate the effectiveness of our approach using captured traffic traces.

1 Introduction

Over recent years there has been a dramatic increase in the variety of applications used in the Internet. Besides the 'traditional' applications (e.g. email, web) new applications have gained strong momentum (e.g. gaming, P2P). The ability to dynamically classify flows according to their applications is highly beneficial in a number of areas such as trend analysis, network-based QoS mapping, application-based access control, lawful interception and intrusion detection.

The most common identification technique based on the inspection of 'known port numbers' suffers because many applications no longer use fixed, predictable port numbers. Some applications use ports registered with the Internet Assigned Numbers Authority (IANA) but many applications only utilise 'well known' default ports that do not guarantee an unambiguous identification. Applications can end up using non-standard ports because (i) non-privileged users often have to use ports above 1024, (ii) users may be deliberately trying to hide their existence or bypass port-based filters, or (iii) multiple servers are sharing a single IP address (host). Furthermore some applications (e.g. passive FTP) use dynamic ports unknowable in advance.

A more reliable technique involves stateful reconstruction of session and application information from packet contents. Although this avoids reliance on fixed

[1] Work supported by Cisco Systems, Inc under the University Research Program.

port numbers, it imposes significant complexity and processing load on the identification device, which must be kept up-to-date with extensive knowledge of application semantics, and must be powerful enough to perform concurrent analysis of a potentially large number of flows. This approach can be difficult or impossible when dealing with proprietary protocols or encrypted traffic. The authors of [1] propose signature-based methods to classify P2P traffic. Although these approaches are more efficient than stateful reconstruction and provide better classification than the port-based approach they are still protocol dependent.

Machine Learning (ML) automatically builds a classifier by learning the inherent structure of a dataset depending on the characteristics of the data. Classification in a high dimensional attributes space is a big challenge for humans and rule-based methods, but stochastic ML algorithms can easily perform this task. The use of stochastic ML for traffic classification was raised in [2], [3] and [4]. However, to the best of our knowledge no systematic approach for application classification and evaluation has been proposed and an understanding of possible achievements and limitations is still lacking. We propose a detailed framework for self-learning flow classification based on statistical flow properties that includes a systematic approach of identifying the optimal set of flow attributes that minimizes the processing cost, while maximizing the classification accuracy. We evaluate the effectiveness of our approach using traffic traces collected at different locations in the Internet.

2 Related Work

Previous work used a number of different parameters to describe network traffic (e.g. [1], [5], [6]). The idea of using stochastic ML techniques for flow classification was first introduced in the context of intrusion detection [2]. The authors of [7] use principal component analysis and density estimation to classify traffic into different applications. They use only two attributes and their evaluation is based on a fairly small dataset. In [3] the authors use nearest neighbour and linear discriminate analysis to separate different application types (QoS classes). This supervised learning approach requires an a-priori knowledge of the number of classes. Also, it is unclear how good the discrimination of flows is because in [3] the sets of attributes are averaged over all flows of certain applications in 24-hour periods. In [4] the authors use the Expectation Maximization (EM) algorithm to cluster flows into different application types using a fixed set of attributes. From their evaluation it is not clear what influence different attributes have and how good the clustering actually is.

3 ML-based Flow Classification Approach and Evaluation

As initial input we use traffic traces or capture data from the network. First we classify packets into flows according to IP addresses, ports, and protocol and compute the flow characteristics. The flow characteristics and a model of the flow attributes are then used to learn the classes (1). Once the classes have been learned new flows can be classified (2). The results of the learning and classification can be exported for

evaluation. The results of the classification would be used for e.g. QoS mapping, trend analysis etc. We define a flow as a bidirectional series of IP packets with the same source and destination address, port numbers and protocol (with a 60 second flow timeout). Our attribute set includes packet inter-arrival time and packet length mean and variance, flow size (bytes) and duration. Aside from duration all attributes are computed in both directions. We perform packet classification using NetMate [8], which supports flexible flow classification and can easily be extended with new flow characteristics. For the ML-based classification we use autoclass [9], an implementation of the Expectation Maximization (EM) algorithm [10]. EM is an unsupervised Bayesian classifier that automatically learns the 'natural' classes (also called clustering) inherent in a training dataset with unclassified cases. The resulting classifier can then be used to classify new cases (see [4], [9]).

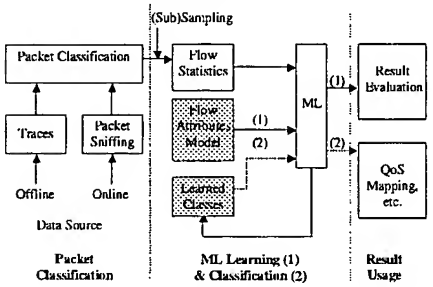

Fig. 1. ML-based flow classification

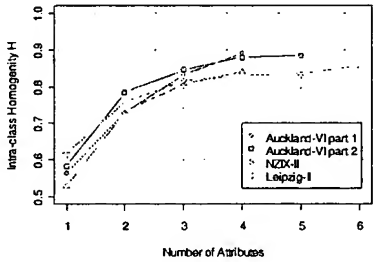

Fig. 2. Intra-class homogeneity

For the evaluation we use the Auckland-VI, NZIX-II and Leipzig-II traces from NLANR [11] captured in different years at different locations. Because the learning process is slow we use 1,000 randomly sampled flows for eight destination ports (FTP data, Telnet, SMTP, DNS, HTTP, AOL Messenger, Napster, Half-Life), which results in a total of 8,000 flows. Finding the combination of attributes that provides the most contrasting application classes is a repeated process of (i) selecting a subset of attributes, (ii) learning the classes and (iii) evaluating the class structure.

We use sequential forward selection (SFS) to find the best attribute set because an exhaustive search is not feasible. The algorithm starts with every single attribute. The attribute that produces the best result is placed in a list of selected attributes SEL(1). Then all combinations of SEL(1) and a second attribute not in SEL(1) are tried. The combination that produces the best result becomes SEL(2). The process is repeated until no further improvement is achieved. To assess the quality of the resulting classes we compute the intra-class homogeneity H. We define C and A as the total numbers of classes and applications respectively. If N_{ac} is the number of flows of application a that fall into class c and N_c is the total number of flows in class c H_c is defined as:

$$H_c = \max\left(\frac{N_{ac}}{N_c} \mid 0 \le a \le A-1\right) \qquad (0<H\le 1) \qquad (1)$$

For each trial H is the mean of H_c for $0 \le c \le C-1$ and the objective is to maximize H to achieve a good separation between different applications. For the evaluation we assume a flow's destination port defines the application. This may be incorrect (as stated initially) but we assume it is true for a majority of the flows. Unfortunately

public available traces do not contain payload information usable for verification.

For each trace (and for two different parts of Auckland-VI) the best set of attributes found is different and the size varies between 4-6 (see Fig.2.). We rank the attributes according to how often they appear in the best set: forward packet length mean, forward/backward packet length variance, forward inter-arrival times mean and forward size (75%), backward packet length mean (50%), duration and backward size (25%). Clearly, packet length statistics are preferred over packet inter-arrival time statistics for the ports we use. The average maximum H is 0.87±0.02 but H greatly differs for different ports (e.g. 0.98±0.01 for Half-Life but only 0.74±0.14 for HTTP).

4 Conclusions and Future Work

We have proposed a framework for ML-based flow classification based on statistical flow properties, identified a systematic approach of identifying an optimal set of flow attributes and evaluated the effectiveness of our approach. The results show that some separation of the applications can be achieved if the flow attributes are chosen properly. We plan to evaluate our approach with a larger number of flows and more applications (e.g. audio/video streaming). We hope to get traces that contain payload information usable for verifying the actual applications. We also plan to experiment with more attributes (e.g. idle time, burstiness) and possibly use payload information in a protocol independent way. Furthermore the precision of the resulting classifier and the classification performance has not yet been evaluated.

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